REMARKS/ARGUMENTS

This case has been reviewed and analyzed in view of the Official Action dated 20 November 2003. Applicants hereby traverse the rejections made in the Official Action as outlined hereinafter.

In the Official Action, the Examiner rejected Claims 1 through 3 under 35 U.S.C. § 103, as being unpatentable over Foohey, U. S. Patent No. 3,027,398, in view of Itoh et al., U.S. Patent No. 6,187,968. The Examiner has stated that the Foohey reference disclosed the production of dimethyl 1, 4-cyclohexanedicarboxylate by the catalytic process of hydrogenation. The Examiner further states that the reference specifically teaches ruthenium supported on an inert substrate and a passivating step where ruthenium oxide is reduced to the desired level of activity. The Examiner admits that the reference does not disclose the specific use of alumina and the process parameters of the catalyst manufacturing claims. However, the Examiner then refers to the Itoh reference as disclosing the production of the instant ester and the use of a ruthenium catalyst for that purpose. The reference specifically discloses the ruthenium catalyst on an alumina support. The Examiner therefore concludes that it would have been obvious to use the alumina support of the supporting reference Itoh in the method of the primary reference Foohey. The Examiner further concludes that a skilled practitioner in the method of catalytic production would know how to use the obvious steps of mixing, heating, cooling, evaporation, precipitation and drying to produce a catalyst of the desired properties. The Examiner then states that those process parameters would have to be

shown to produce an unexpected result to distinguish over the known prior art procedures.

It is respectfully submitted that the Foohey reference is directed to a process for preparing the DMCHD by a catalytic hydrogenation of DMT. In Foohey, the ruthenium precursor is oxidized to ruthenium oxide, with the reduction of the catalyst into active forms being performed in-situ at the initial stage of the catalytic reaction. The oxidation of ruthenium results in conglomeration of ruthenium oxide that subsequently results in the formation of much larger metallic ruthenium active centers.

In contradistinction, the inventive method of the subject patent application the supported ruthenium catalyst is prepared by the ruthenium precursor being directly reduced, which results in higher dispersion and much smaller metallic ruthenium active centers. The resulting catalyst of the invention of the subject patent application is more active and more stable because of the improved dispersion of the active centers. That improved dispersion of the active centers is "an unexpected result" by virtue of the post-treatment of the catalyst in the inventive method. Such post-treatment includes the removal of the Ru/Al_2O_3 from the triple neck bottle and placing the material into a stainless steel breeder, adding hydrogen gas into the breeder and heating at a temperature of 450° C for two hours, followed by cooling the catalyst to atmospheric temperature and then adding a small amount of air to passivate the surface of the catalyst. Subsequent to this post treatment, the catalyst is then combined with DMT and exposed to hydrogen gas and an elevated temperature.

The Itoh et al. reference does not overcome the deficiencies of Foohey. The Itoh et al. reference is directed to a process for the preparation of CHDM (Embodiment IV). The process is carried out in a fixed bed continuous process wherein a hydrogenation reaction is carried out in the presence of an alumina supported ruthenium catalyst. However, nowhere does the reference disclose or suggest a post-treatment of the catalyst by the treatment with hydrogen gas at an elevated temperature of 450°C for two hours, followed by cooling the catalyst to ambient temperature, and then adding air prior to its combination with the constituent of the CHDM process.

Therefore, as neither Foohey or Itoh et al disclose or suggest a post-treatment of the Ru/Al_2O_3 catalyst, to produce a catalyst with higher dispersion and much smaller metallic ruthenium active centers to thereby form a catalyst that is more active and more stable and produced by prior art processes, they cannot make obvious the invention of the subject patent application.

Accordingly, it is now believed that the subject patent application has been placed in condition for allowance, and such action is respectfully requested.

Respectfully submitted,
FOR: ROSENBERG, KLEIN & LEE

David I. Klein
Registration #33,253
Dated: 19 March 2004

Rosenberg, Klein & Lee
3458 Ellicott Center Drive
Suite 101
Ellicott City, MD 21043
410-465-6678